

Substrate	Coupling Agent (X=silane or thiol)	Template Layer (Z=siloxane or metal sulfide)	
OH MO <sub>X</sub> M= Si, Ti, In, Fe, 40	A A= NH <sub>2</sub> or -N O R R= alkyl or phenyl SiY <sub>3</sub> Y= halogen or alkoxy 42	H <sub>2</sub> N NH <sub>2</sub> (CH <sub>2</sub> ) <sub>n=2-6</sub> Si O O O O O O O O O O O O O O O O O O	
M or MM'  M= Au, Pt, Cu,  MM'= GaAs, CdSe,  41	NH <sub>2</sub> NH <sub>2</sub> NH <sub>2</sub>	NH <sub>2</sub> (CH <sub>2</sub> ) <sub>n=2-6</sub> S NH <sub>2</sub> (CH <sub>2</sub> ) <sub>n=1-4</sub> S 44	

FIG. 2B

Substrate	Coupling Agent (X= OH,CO <sub>2</sub> H, PO <sub>3</sub> H <sub>2</sub> )	Template Layer (Z= alkoxysilane, phosphate or carboxylate)	
CI Si VIO	HO - R - NH <sub>2</sub> R= alkyl or phenyl	H <sub>2</sub> N NH <sub>2</sub> (CH <sub>2</sub> ) <sub>n=2-6</sub> O n=1-4	
40	42	44 Si	
II -IV	HOOC - R - NH <sub>2</sub> (HO) <sub>2</sub> OP - R - NH <sub>2</sub> R= alkyl or phenyl	$\begin{array}{c c} NH_2 & NH_2 \\ (CH_2)_{n=2-6} & O \\ \hline O & O \\ \hline CdSe & O \\ \end{array}$	
41	42	44 InAs	

FIG. 2B CONT

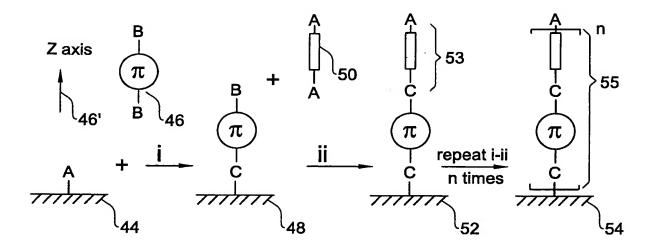


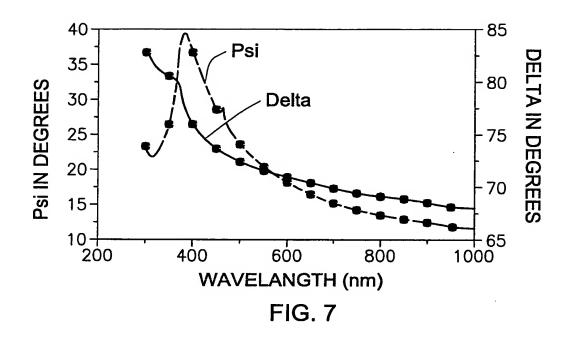
FIG. 3A

Α	В	С	INS./SC	(COND./SC)	
-NH <sub>2</sub>	07070	0 1 0	AA	B-—-B	(INS/COND)
R NH <sub>2</sub>		R N	-(CH <sub>2</sub> ) <sub>n</sub> - n=1-12	S n=1-6 oligothiop-	
-NH <sub>2</sub>	≻o	<u></u> <u></u> <u> </u> <u> </u>	<>>(CH <sub>2</sub> ) <sub>n</sub>	hene H	
-sicl <sub>3</sub>	-OH		n=0-5  B—π—B  naphtalene	n=1-6 oligoaniline A————A	SC/SC
CI	-он		perylene terylene antracene pentacene	porpherine phthalocyanine	

FIG. 3B

$$H_2N$$
 $H_2N$ 
 $H_2N$ 
 $H_2N$ 
 $H_2N$ 
 $H_2N$ 
 $H_3N$ 
 $H_4N$ 
 $H_2N$ 
 $H_4N$ 
 $H_4N$ 

FIG. 6



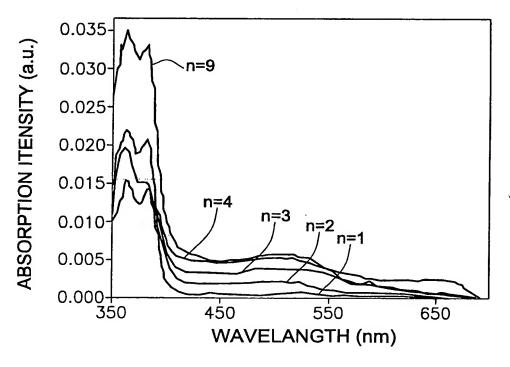
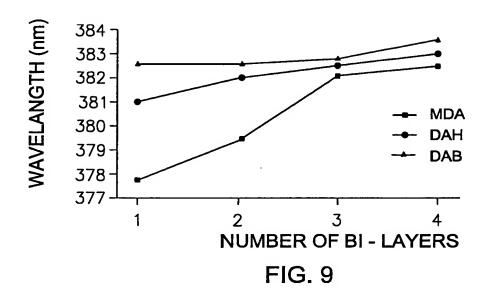


FIG. 8



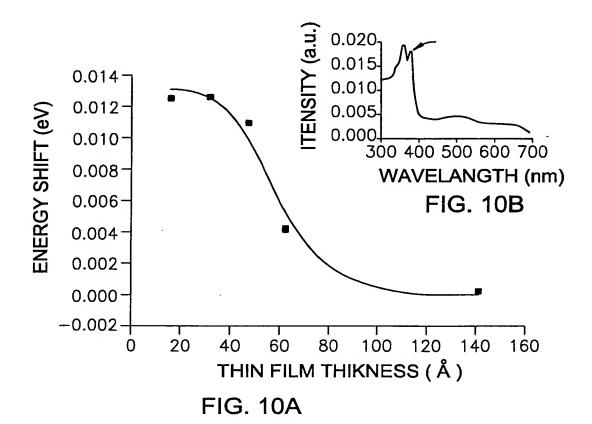


FIG. 11

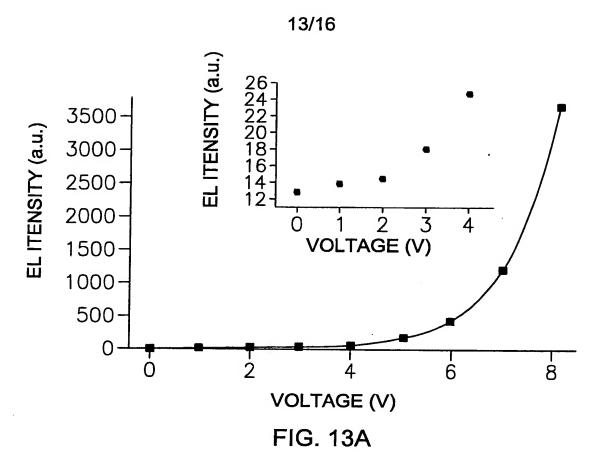
FIG. 12A

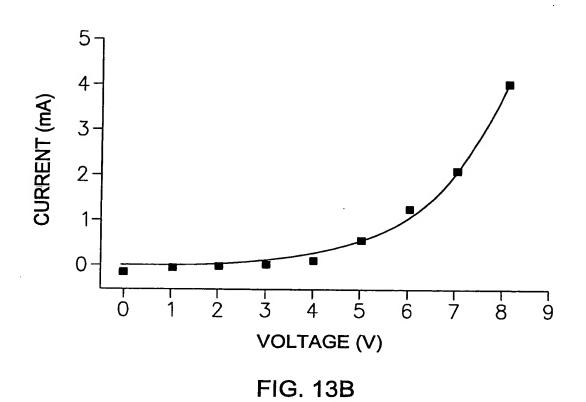
NTCDI or 
$$PTCDI$$
  $ii$   $M=Si, Ge$   $iii$ 

FIG. 12B

$$\begin{array}{c} \text{COCI} \\ \\ \text{N} \\ \\ \text{X} \\ \\ \text{N} \\ \\ \\ \text{REPEAT} \\ \\ \text{ii - iii} \\ \\ \\ \text{PS=[X=O]} \\ \\ \text{P6=[X=S]} \\ \end{array}$$

FIG. 12C





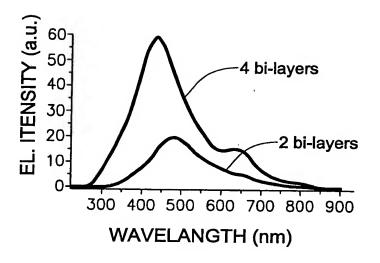


FIG. 14

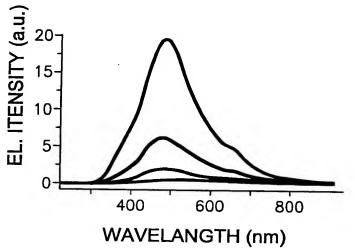


FIG. 15

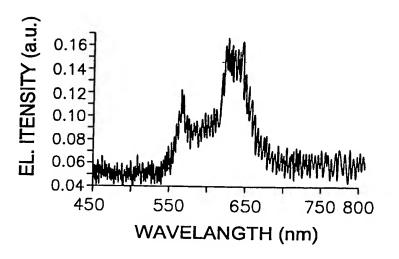


FIG. 16

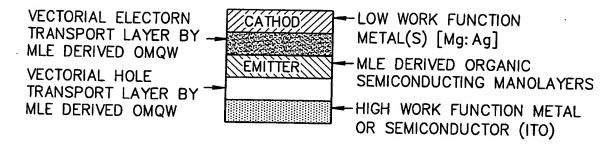
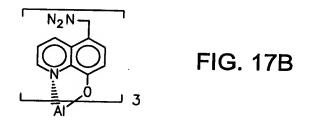


FIG. 17A



٠, ١٠,٠٠٠

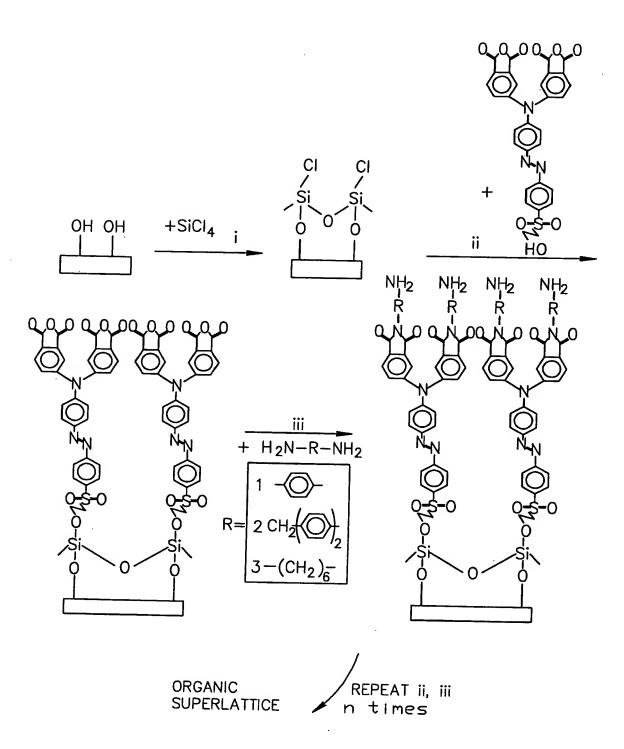


FIG. 19